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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/917,535	07/27/2001	Carol L. Thompson	10001215	2127

7590 05/13/2004
HEWLETT-PACKARD COMPANY
Intellectual Property Administration
P.O. Box 272400
Fort Collins, CO 80527-2400

EXAMINER

DAS, CHAMELI

ART UNIT PAPER NUMBER

2122

DATE MAILED: 05/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/917,535

Applicant(s)

THOMPSON ET AL.

Examiner

C.DAS

Art Unit

2122

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 July 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

1. Claims 1-20 are pending.

Specification

2. The abstract of the disclosure is objected to because it contains more than 150 words. Correction is required. See MPEP § 608.01(b).

Oath/Declaration

3. The oath or declaration is defective because: It does not include inventor's signatures.

A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1- 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chi, US 5,784,711 and further in view of the background section and Okin, US 5,361,337.

As per claim 1, Chi discloses:

- a first logic ... compilation of a computer program by the computer (Abstract, col 5, lines 45-51)

- identify memory reference... cache memory (col 4, lines 22-30, col 8, lines 66-67, col 9, lines 1-10)
- a third logic ... memory references (col 5, lines 12-16, col 5, lines 45-50)
- store the prefetched data in cache memory (col 7, lines 3-12).

Chi discloses identifying memory references. Chi does not specifically disclose the *critical* memory references. However, the background section of the reference discloses the critical memory references (col 1, lines 29-38).

Chi does not specifically disclose context switch occurs from a process or thread associated with the second context to a process or thread associated with the first context during program execution and first context is resumed when a switch from the second context to the first context occurs during program execution. However, Okin discloses context switch occurs from a process or thread associated with the second context to a process or thread associated with the first context during program and first context is resumed when a switch from the second context to the first context occurs during program execution (Okin, abstract, col 3, lines 27-44, col 2, lines 23-36). The modification would be obvious because one of the ordinary skill in the art would be motivated to maximize the speed of the processor by utilizing the pipeline to the fullest extent.

As per claim 2, Chi discloses:

- the third logic comprises logic configured to generate prefetch code ... memory references (Chi, abstract).

As per claim 3, Chi discloses:

- the third logic comprises ... of a computer program (abstract, col 4, lines 59-67, col 7, lines 3-12).

As per claim 4, Chi discloses:

- third logic comprises logic configured to store a location ... in cache memory (abstract, col 4 lines 46-67, col 4, lines 18-30). For resuming execution of the process or thread ... context, see the rejection of the claim 1 above.

As per claim 5, Chi discloses:

- third logic comprises logic configured to generate code to store a prefetch count at a particular location... memory element (col 6, lines 20-58).

6. Claims 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chi, US 5,784,711 and further in view of the background section , Okin, US 5,361,337 and official notice.

As per claim 6, Chi discloses:

- third logic comprises configured to allocate a prefetch memory register ... memory reference (col 5, lines 45-55, col 6 lines 20-40). Chi discloses the prefetch memory registers (col 5, lines 45-65). Chi does not specifically disclose the register is a constant starting register. However, official notice is taken for the constant starting register. The modification would be obvious because one of

the ordinary skill in the art would be motivated to store the data in the register in an efficient way.

As per claim 7, Chi discloses:

- an operating system of the computer obtains the prefetch count and obtains the data stored ... register and continuing sequentially ... prefetch count (col 2, lines 54-65, col 6, lines 35).

For the context switch and resumption of the process, see the rejection of claim 1 above. For constant starting register see the rejection of claim 6 above.

Claims 8-14 are the method claims of the corresponding apparatus claims 1-7 respectively and rejected under the same reason set forth in connection of the rejection of claims 1-7 respectively.

Claims 15-19 are the computer program claims corresponding to the method claims 1-5 and rejected under the same reason set forth in connection of the rejection of claims 1-5 respectively.

For claim 20, see the rejections of claims 6 and 7.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

TITLE: METHOD FOR EXECUTION OF JUMPS IN AN INSTRUCTION MEMORY OF A COMPUTER, US 3571804 A

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TITLE: Instruction prefetch mechanism utilizing a branch predict instruction, US

5742804 A

TITLE: Compressor system memory organization and method for low latency access to uncompressed memory regions, US 6549995 B1

TITLE: Interrupt descriptor cache for a microprocessor, US 6378023 B1

TITLE: System and method of scoreboarding individual cache line segments, US 5471602 A

TITLE: Prefetching hints, US 6240488 B1

TITLE: Method for providing virtual memory to physical memory page mapping in a computer operating system that randomly samples state information, US 6237073 B1

TITLE: Prefetching data using profile of cache misses from earlier code executions, US 6047363 A

TITLE: Consistently specifying way destinations through prefetching hints, 5732242 A

TITLE: Instruction Prefetching of Systems Codes with layout optimized for reduced cache misses, author: Xia et al, 1996, ACM.

TITLE: The effect of context switches on cache performance, Mogul et al, ACM, 1991.

TITLE: Reducing Multithreaded frame cache miss ratio by prefetching and working frame set scheduling, author: Choi et al, IEEE, 1996.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chameli Das whose telephone number is 703-305-1339.

The examiner can normally be reached on Monday-Friday from 7:00 A.M. to 3:30 P.M.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor Tuan Dam can be reached at 703-305-4552. The fax number for this group is: (703) 872-9306.

An inquiry of general nature or relating to the status of this application or proceeding should be directed to the group receptionist whose telephone number is 703-305-9600.

Chameli C. Das
CHAMELI C. DAS
PRIMARY EXAMINER

5/12/01